



The Author's respectful com
SOME FACTS

OF

ELECTRICITY,

OBSERVED IN

SPASMODIC CHOLERA.

BY JAMES MATHER, ESQ.,

Member of the South Shields Board of Health.

NEWCASTLE-UPON-TYNE:

PRINTED AT THE OFFICE OF JOHN CHRISTIE, 3, NELSON STREET.

1848.

STAN HODG

541

RECEIVED

STAN HODG

STAN HODG

STAN HODG

STAN HODG

STAN HODG

R55040

PREFACE.

CHOLERA IS AGAIN AT HAND.

In sixteen years it has made the circuit of the globe, scattering desolation in its path; and, once more, is in the heart of Europe.

This terrible physical phenomenon, bounding on its western course, will, in a few months, be in the midst of the dense masses of the English population.

It is perhaps well for humanity that this fearful enemy of man is invading the civilized world, amongst the abodes of science and genius. The concentration of their powers upon it, in the mortal encounter, is the only human hope—if human means may avail. Their attention is again directed to a meteorological phenomenon, an attendant, if not the cause of the great morbid action.

The connexion of *Spasmodic Cholera* with a *disturbed atmospheric Electricity*. It was accidentally observed during its first attack.

These "*Observations*" were made in the heart of the Sunderland and Newcastle Cholera district, and sent, in 1832, to a relative of the author's, the chief magistrate of Jedburgh, in which direction it was supposed the Cholera atmosphere would range. He had them immediately published, and scarcely had they appeared when the Cholera storm rolled over that district with much violence, previous to its burst upon Glasgow.

The "*Observations*" quoted, and their views confirmed by Professor Lizars, and similar opinions entertained by Drs. Clanny, Greenhow, Young, Walsh, Orton, William Ainslie, and Messrs. Losh and Forster, with their increasing extension in the scientific and medical world, induce this republication on the reappearance of Cholera in the European atmosphere.

The point to which they refer cannot be too early or too clearly investigated.

SOUTH SHIELDS, September, 1848.

OBSERVATIONS

ON

SPASMODIC CHOLERA.

THE facts about to be detailed will tend, in a small degree to elucidate a subject hitherto involved in much obscurity, which, for the sake of humanity, it is desirable should, as soon as possible, be clearly understood.

About one month before CHOLERA had ceased at Sunderland, I observed a peculiarly formed dingy-brown eloud over that place, and nowhere else. I first imagined it to have been produced by my relative position to the sun's rays—the sun being then only a few degrees above the horizon. On looking again, however, during the day, and in the evening, the same appearance still continued.

After this, I made daily observations in that direction towards the south, and observed, almost invariably, more or less of the same peculiarity. I was drawn to examine the state of the atmosphere and clouds, by overhearing, one day, two sea-captains state their opinions of their extraordinary threatening aspect and singular nature, and foretell a speedy serious storm; but which storm never arrived.

In a little while, the extension of the same appearance, in a west direction, took place, assuming the figure of a segment of a circle. It then reached apparently near to Newcastle, and about this period, early in December, Cholera broke out there. I now felt myself warranted in naming the matter to one or two confidential friends. Soon afterwards, it took a north and north-east course towards the sea, behind North Shields; but not having heard of disease in the direction indicated, I declared I now conceived myself in error, and that such appearances had been merely accidental. To my surprise, I now first learned that exactly at the point named, the disease had actually made an attack with some virulence. This coincidence instigated me to examine more minutely. Shortly after, it

seemed gradually to be pressing in upon its centre, where I happened to be, from the west and south-west, hanging over the banks of the Tyne. I then began to predict its attacks. I was, however, for a short time deceived; but at length it did come in the direction I expected, within about three miles of Shields. I supposed it would extend its visitations to two villages near at hand; in which anticipation, however, I rejoice to say, I have erred—not more than one or two fatal cases having occurred therein.

On the 29th of December, after Cholera broke out with so much fury at Gateshead, I had occasion to visit Newcastle. On the road, looking back upon North Shields, I beheld, scattered in various directions, and in various shapes, small detached clouds above the latter town, *evidently affected by some other cause than the wind*, and a very peculiar light was observable in the atmosphere. Although the sun was not eluded, shortly after mid-day I could, without shrinking, keep my eyes fully fixed upon him. He appeared somewhat resembling a bright moon through a slight haze, giving to the atmosphere a reddish tinge; and on withdrawing the eye, every object on the earth seemed to be similarly affected. Here and there particular objects assumed quite a red appearance, deeper even than that of the atmosphere. On turning Byker Hill, within a mile and a half of Newcastle, where the disease was prevailing, several times I was convinced I felt a tingling in my arms and elbows, as if affected with gentle strokes of electricity;—and from my position, I had an opportunity of examining a most curious state of the clouds over Gateshead. They seemed tossed and torn in all directions, like hay in a meadow scattered by a hurricane, but they moved not, or, if they did, it was imperceptible to the naked eye. They looked as if they had been violently acted on by some great impulse, which had as suddenly been arrested, leaving them in the attitude of a storm, without any other symptoms of one; it seemed a still hurricane, demonstrated by wrecks of clouds. The wind was blowing steadily, but gently, from one point. In one part the clouds were fibrous, coiled, and twisted; in others, drawn out, extended, and scattered like parcels of torn hay, evidently beyond the slightest influence or control of the wind—as frequently at angles with it, as in the same line. And there was a large mass of cloud, beginning with a point, above that un-

fortunate town, rising in a semicircle into the zenith, increasing in diameter as it went, as apparently fixed and immoveable as a rock, contrasting strongly with all around, uniting the Heaven with the Earth. On gazing upon these things, a deep feeling of awe came over my mind,—for I felt as if a spectator of some extraordinary and direct operation of Omnipotence. I had never beheld the like before.

Several times afterwards, I visited Newcastle, and though there were observable somewhat similar appearances, yet they were in a much less degree.

Within this fortnight, I regret to have observed near the confines of this town, but more particularly to the north and west on the north bank of the Tyne opposite, clouds of a similar nature, more marked than formerly; and, on the 15th inst. (Jan. 1832), they were rather striking; but though the disease has been continuing its progress in North Shields, yet, until this day, 28th, there has not been a corresponding attack, when it has broke out in much force, in that direction, in the small village of Murton.

The extraordinary shape, and peculiar colour and appearances of those atmospherical phenomena, which were not apparently influenced by ordinary causes, I conceive can be imputed only to some *peculiar state of electricity*.*

If, then, I have not deceived myself, there are peculiar atmospherical appearances attendant upon Spasmodic Cholera; and that over this town there has been no decisive demonstration of them, which Cholera has yet scarcely touched; although in the very heart of the infected district, being only six miles from Sunderland, nine from Newcastle and Gateshead, and the breadth of the Tyne, about three hundred yards, from North Shields, in all which places it has alarmingly prevailed.

Such peculiarities being different from the known appearances, must have a different cause, or the same cause in a different degree, for their production; and the most rational mode of accounting for their existence, from their analogy to its known laws, is electricity. They seemed as if a flood of electric fluid had been poured at once

* I have avoided attending to the classification of clouds, for I conceive this to be a class *sui generis*. Whoever may be under a Cholera atmosphere will not easily mistake it.

upon them, which, passing through, tearing and drawing them out in its passage, left them incapable of further action; or, as if they had, by some overwhelming influence, been assembled—a stupendous electric battery—to shoot forth their invisible projectiles, armed with irresistible power. But, nevertheless, I conceive they are not the cause, nor even the vehicle of a surcharged atmosphere, but merely the accidental visible indexes of its state.

It may be objected, that this great physical agent, had it been so produced, would not have confined itself to a locality for any length of time; that if it were in excess at one point, it would soon have diffused itself over greater space, till it became equalized.

Air is a bad conductor.

Electricity of the Aurora Borealis is known only in particular latitudes, and is often observed only in a particular situation; in such cases it seems not disseminated, but confined to particular portions of the atmosphere.

Electricity, as displayed in the neighbourhood of volcanoes, &c. by brilliant flashes of lightning, is not extended, but attached to particular localities.

Electricity, as seen in thunder-clouds, is frequently known to take a particular course, without soon wasting or expanding itself, in a direction along the banks of rivers, or by attaching itself to a particular district or mountain.

Electricity, as it has been occasionally observed rising out of the earth at particular points, in streams and flashes of light, is also not general, but local in its operations.

Electricity then being possessed of this property of locality, it is not opposed, but in accordance with its nature, that in the matter under inquiry, it should also assume a locality; and as it is commonly observed in clouds to sweep in distinct particular directions, and not expand itself from its centre, so in this instance it seems to be following the same law. The difference appears only to be in the degree of strength of its existence, and not in a difference of its nature.

But it has been said Cholera has appeared in different latitudes—under the Line, and nearly under the Pole. In different altitudes—on the mighty mountains of Asia, and in plains and towns on a level with the sea. In different kinds of weather—in dry and

serene, equally as in damp and rainy. In different temperatures—in frost and snow, when the thermometer stood below zero, or when it was up at one hundred and twenty degrees.

And is not this all-pervading agent of nature found reverberating amongst the Himalayas, as well as heard rolling over the plains? Is it not felt in its dreadful bursts at the equator, and seen in its illuminations at the Pole? Is it not heard in the thunder of a rainy autumnal day, and seen in the intensity of a bright winter's frost?

These, therefore, if there be no better, are not tenable objections to the opinion that electricity, in a peculiar state, has some extraordinary influence in the production of Spasmodic Cholera.

In addition to the external evidence adduced, there are two facts related in the *Augsburgh Gazette* of the 7th of December, extracted into the *Courier* of the 15th of the same month, which afford a singular corroboration of this view:—

“It is a remarkable fact, that the Cholera Morbus was expelled from Warsaw after the terrible events of the night of the 15th of August, and did not reappear till towards the end of the month, when the minds of the inhabitants were restored to comparative tranquillity. It again suddenly disappeared after the bombardment of the city on the 17th of September. The question is, whether the tremendous cannonade purified the air, or whether the fears of the vengeance of the Russians had so entirely occupied the minds of the people, that the disease, over which the imagination beyond all doubt has great influence, was at once forgotten, and consequently deprived of its powers.—However this may be, the fact is worthy of the attention of the faculty, who may compare it with the sudden cessation of the Cholera at Jassy, immediately after one of the most terrific thunder-storms within the memory of man.”—*Augsburgh Gazette, December, 1831.*

The 15th of August, when occurred the temporary suspension of Cholera, was, I think the period when Warsaw had a serious internal commotion, attended by firing of musketry, which probably deranged any local atmospherical peculiarity, by the concussions imparted to the air, assisted, perhaps, by the gases produced in the explosion of the powder. According to the best medical authorities, it could not be fear or anxiety of mind, for the depressing pas-

sions, or nervous irritation, are stated to be some of the most predisposing causes of Cholera.—And on the 17th of September, after the tremendous bombardment, and the city likely to be exposed every moment to the sword of a barbarous enemy, the disease suddenly disappeared. Fear, according to the above opinion, would have extended the disease at all points; or, if the medical view be incorrect, the fear and anxiety would be probably as great previous to, as after the bombardment, and should, had this been the cause, have effected sooner a similar result—the sudden disappearance,—which, I conceive, leaves no doubt of the real cause—an extensive change produced in the air by the tremendous discharges of artillery.

It is on the same principle that seamen occasionally proceed, when, in tropical latitudes, they are threatened by the approach of a water spout, or other alarming aerial visitation; they fire their cannon in the direction of the object, which generally produces its entire dispersion.

Had there still remained doubts that the cessation of this disease was effected by physical, and not by mental operations, the storm at Jassy would have entirely dispersed them.

*The very existence of such a storm at Jassy, when the Cholera raged in fearful violence, was evidence that there had been an extraordinary local derangement of the electric fluid at that point; and its consequence, by enabling the usual atmospherical operations to proceed, was, the departure of the unusual disease with its cause, which the storm appeared to have destroyed.**

* “The atmosphere is unseasonable * * and surecharged with the electric fluid.”—(*Professor Lizars’ Theory of Cholera Asphyxia.*)

“The most obvious, and apparently the most feasible way of accounting for the visitations of Cholera, is, * * * that there is a diminution of the free electric fluid in the atmosphere, which is the great cause of the epidemic.”—(*Orton.*)

“On the night between the 2nd and 3rd November, much lightning occurred. * * Upon the 6th we reported six new cases, and two deaths; and upon the night between the 6th and 7th, we had continued flashes of lightning during the whole night—an unusual phenomenon at this season of the year. Upon the 7th, two new cases and five deaths. Upon the 8th, seven new cases and three deaths. * * Upon the 15th, five new cases and one death. At 9 p.m., we had a severe fall of snow; and upon the following day, viz., the 16th, I reported five new cases, which I had visited; and on the night between the 15th and 16th, I was informed that there had been much lightning, accompanied by thunder. On the 16th, at 6 o’clock a.m., I observed a most vivid flash of lightning; and on the 17th, we had four

It also proved, that had it been a disease, which, having been engendered, could exist and procreate itself in any situation, and in any state of the atmosphere, it would not so soon have been destroyed; it might then have only been gradually worn out; but it immediately ceased with the storm—which shows further, that ordinary causes, and ordinary situations, are not the originators and sustainers of this alarming visitation; and, therefore, that when the mighty *hidden cause* of those great atmospherical changes shall have ceased, and the atmosphere returned to its natural and ordinary condition, this disease will probably at the same time universally disappear.

Having shortly gone through some of the external indications of the action of electricity in the production of Cholera, we will now

new cases, and one death. On the 18th, five new cases and five deaths."—*Clanny's Hyperanthrax, or the Cholera of Sunderland*.—See also *Appendix*.—*The Cholera of Chusan, by Walsh*.

Dr. Mc'Cormack, in the *LANCET* of August 6th, states, "That the outbreak of Cholera, in the town of Sligo, where it raged with terrific violence in 1832, was preceded by a greatly disturbed atmosphere, with a storm of thunder and lightning."

Extract of a letter, written by an Englishman from St. Petersburg, during the prevalence of Cholera there, appeared in the *London Journals* of 27th July, this year (1848):—

"A very important discovery has been made here very recently. * * The air here has had a very singular effect on the magnetic power. Whilst the Cholera was at its height, the action of the magnet was nearly neutralized; which, now the disease is gradually subsiding, assumes by degrees its former power. A magnet block, which used to carry 80lbs., would, during the worst time of Cholera, not carry above 13lbs. Its strength has now increased again to 60lbs. The electro-magnetic telegraph, at one time, would not work at all."

On the same subject, "THE MEDICAL TIMES," of the 5th of August, states, "Mention is made of some details relative to the influence of the atmosphere, and the variations it has undergone: for, instance, an almost total want of electricity, and also the disproportionate weakness of the power of magnetism being observable during the commencement, increase, and decrease of the Cholera. Scientific men, who have made their observations from the outbreak of the epidemic, in regard to the influence of the magnet, have discovered, that in the last few days, its power has considerably increased. It has been proved, that in the course of the week, from the 5th of July to the 12th of July, a magnet, which lifted a weight of 40lbs., could not lift more than from 4 to 5lbs. weight during this period; the influence of this stone afterwards increased to 16lbs. On the 17th of July, there were 3,710 persons suffering from Cholera at St. Petersburg."

This electro-magnetic experiment sustains, in a striking manner, the views of the text, and gives strong hopes that if England is to be visited with this scourge, scientific experiments, with the proper instruments, will lay bare this most important point. Not only so, but it encourages observations of a similar nature in all epidemics—opening out a new region to medical science, that may eventually be the source of the greatest security against their attacks.

examine, in a very concise manner, some of the internal proofs in support of the same view.

The disease, when it shews itself in its native malignity, as in India, and on the Continent of Europe, has not the slightest premonitory symptoms. The patient is struck down as if felled by a cannon-ball, or a bolt from Heaven. The strongest and most powerful frame is in an instant rendered motionless and still—intermitted only by the nerves being thrown into violent spasmodic action.

The Arabians and Syrians conceived, from its resemblance to the instantaneous attack of the desert wind—the Samil—that it was some similar pestilential vapour.

The blood in the veins becomes dark coloured,* the extremities and face blue, like a body struck by lightning—the involuntary nerves are paralyzed—the voluntary torn from the direction of the will, and acted upon by some other power into excruciating contractions, and the body becomes cold like a corpse, with scarce a pulsation to be felt. In short, it appears an attack of apparent sudden death. And sometimes the body, after death, has been known, even in this district, to be affected by extraordinary convulsive movements, as if attempting to become reanimated, or as if agitated by galvanic powers; but generally, according to the observations of the Medical College of Poland, “*the muscles are soft and flaccid, resembling those of persons killed by lightning.*”

These are the first most marked symptoms.† In them all will be found striking evidence of the operation of electricity. In the suddenness of the attack—in its effect upon the nervous system—its change upon the appearance of the blood and extremities—its deprivation of heat—its termination, and its *post mortem* appearances: they all can be explained by such agency, and by no other that I am aware of;—they demonstrate, in fact, the symptoms of a person “killed by lightning.”

* Dr. Moran believes that oxygen carries electricity through the lungs to the system; and states that venous blood subjected to negative electricity becomes red; whilst arterial blood, so treated by positive electricity, becomes black. That venous blood, subjected to galvanism, becomes, at the positive pole, blacker and thinner; but at the negative pole, redder, thinner, and spumous.

† I see I have omitted that soda is not found in the blood, in Cholera, which perhaps indicates the system to have been in a positive state of electricity.

On examination further, it is found that all the secretions are arrested—there is no bile—no urine—the stomach and bowels incapable of retention—paralyzed lactials—the chyle refused—the spleen tendered—no oxygenation of blood in the lungs—almost no action of the heart—the whole system disorganized, inert, and at a dead stand.

If the blood, kidneys, stomach, bowels, liver, spleen, lungs, absorbents, &c., all display symptoms of disease *at the same instant*, the disease ought then to be imputed to an attack having been made upon all, and not on any one in particular.

The bursts of this disease, its development, and crisis at the same moment, would not have allowed time for a morbid action in any of these organs; and, without previous intimation, would not have produced such decisive and fatal results. They could not have been disorganized, as if they had been gunpowder, and touched by a spark. A mere organic disease would have required time for its gradual development. It can only have been the operations of the Mighty Agent alluded to, or a direct, miraculous touch of the hand of Omnipotence itself.

Amongst the chief modes of cure that have hitherto been found most successful, are friction, dry heat applied to the surface, avoidance of moisture, and excitement of the nervous system; or, in the language of Drs. Russell and Barry, “Above every other consideration, *renewed energy in the nervous centre, the source of all vitality and function.*”

When you compare this with the sudden attack of the disease, which is stated to have effected the nervous energy, with the overpowering effects of the application of electricity, by a powerful galvanic battery, or lightning, upon the same part of the human system, and perceive them to be similar, we cannot abstain from yielding our belief, that electricity has, in some degree, been productive of this extraordinary result. Which opinion is sustained by the employment—for the removal of the disease—of friction, the great generator of artificial electricity—dry heat, which assists the production of it—and avoidance of moisture on the surface, which is a conductor of electricity, and would be detrimental in depriving the system of it. Friction, heat, and dryness, being the very means, employed in the electrical machine, for producing and con-

centrating the electric fluid, but with the advantage of isolation in favour of the machine, which will not allow us to refuse our almost conviction of the original cause of the disease. Let the supposition be for one moment entertained, that it is not a human body on which such means are employed, and what would be the conclusion? Simply that attempts are making to excite artificial electricity. It being a human body, does not alter the conclusion: on the contrary, when we know it contains a substance, the nerves, which is highly favourable to the operations of, and seems to enjoy some peculiar connexion with electricity, it the more strongly confirms such opinion. The above appear to be the chief means applied to the cause of the disease.

The others, such as bleeding, narcotics, emetics, &c., seem to be only to obviate the different symptoms which present themselves most marked and prominent.

I will not presume to intrude upon the department of the profession; but it is to be regretted that they have not yet been able to discover the cause of these effects,—that their treatment might be more directly applied to the removal of the disease.

Nature is observed almost invariably to apply one cause for the production of several effects, and doubtless hereafter she will be discovered to have proceeded in this case on similar principles.*

But it may probably be objected that if electricity, as I suppose, be the exciting cause of Cholera, why it does not equally apply to all, why it selects one individual from a family, or a street, why it seems to affect by contagion, and why particular situations seem somewhat more liable to it, such as dirty, damp, low lying streets, banks of rivers, and marshy grounds?

To which we would reply, it does, to a certain degree, apply to all—as a chain of persons around an electric machine, all receive the shock; while some are severely affected, others feel it but slightly; or as an electric discharge that would kill a debilitated man,

* In the future history of medicine, we shall see men returning to the principles promulgated by the earliest founders. They will perceive that the treatment of the fully formed disease is at the same time the most difficult, and the least useful part of their noble profession. They will learn to arrest the evil at the fountain head, and not to dam the current swollen by a thousand tributaries.—*On the Causes and Diffusion of Cholera, Medico-Chirurgical Review*, July, 1848.

would scarcely tingle the nerves of an ox. So here constitutions enervated, broken down by excess or other causes, and without vigour, or in some other particular condition, are those, although with exceptions, generally attacked and overthrown. And that, which is thus acting, has been operating at the same time, on the atmosphere, and upon all other substances; for it scatters into their first principles even the hardest of the metals. Vegetable and animal decomposition, therefore, goes on, I presume, particularly in damp situations, as along the banks of rivers, which the disease often makes its march,—the whole system of organization and animation being somewhat deranged and deteriorated;—and then what is least liable to resist the attack is at once overwhelmed.

Noxious effluvia and miasmata, there can, I imagine, be no doubt predispose strongly to this or any other disease; and those arising from the bodies of the Cholera-dead, which having, even before death, been deprived of the great antiseptic powers—animation and nervous energy—must pass with rapidity into a state of decomposition—will, from their very peculiarity, and the state of the surrounding medium, no doubt greatly assist in inducing the same disease in others. Damp situations, as shores of rivers, affording a medium for facilitating decomposition and conveyance of miasmata, as well as being good conductors of electricity, might be expected, as they are found to be fields for the most extensive operations of Cholera.*

* M. Pallas, chief physician in Algeria, imputes the marsh and intermittent fevers, not to miasmata or malaria, but to a local increased electricity produced in marshes, especially of salt water, by decomposing vegetable matter. From some peculiar condition, he thinks it thus affects the human organism through the nerves. He prescribes placing the posts of the patient's bed, while under treatment, upon a non-conductor, such as glass: and states that the most beneficial consequences have resulted from it.

As the air is so bad a conductor of electricity, which cannot well diffuse itself from the locality in which it is generated, and as perhaps the marshes are beyond the power of his operations, M. Pallas might drain off the electricity by good conductors to other more removed parts. When this subject of electro-physiology is more clearly developed, it will probably be found to play a greater part in the animal and vegetable economy, than is now generally supposed. From a better knowledge, a better and more direct application to the cause may be expected.

If the Cholera atmosphere at any place be found, on instrumental examination, to be in a negative state, it may, on the same principle, be equalized by wire communications with the higher atmosphere or relatively a positive district. Perhaps the telegraphic wires of railways, passing through a Cholera district, may have a tendency to restore, beneficially, the electric equilibrium?

But that it is not entirely owing to such noxious effluvia, is evident from the continuance of the disease since 10th December, now nearly two months, in North Shields, which has had upwards of one hundred and eighty cases, while South Shields, exactly opposite on the other banks of the Tyne, at a distance of three hundred yards, has not been attacked, with the exception of some half dozen instances, although the wind has frequently, in all that time, blown from the infected town upon South Shields.

It has been said that debility, moisture, dirtiness, mental emotions, drunkenness, and all other excesses, are the cause of this disease.—If it be so, why was it not produced in 1830, for they were equally in existence at that period in Sunderland, Gateshead, and Newcastle!

In one day it swept over Gateshead like the sword of an enemy. The Secretary of Gateshead writes to the South Shields Board of Health:—"The Cholera broke out in all parts of the parish simultaneously.—On the *Fell*, in the *low* streets of Gateshead.—In the *high* parts of Gateshead, and the South Shore; at Dunstan and Swalwell, all on the same day." This covers a surface of at least five miles in length, and two in breadth. And in six days, two hundred and fifty were ill, and seventy-five dead. There was not a single case till after it had continued *eighteen days* raging across the Bridge at Newcastle, when it made the burst above described. The people of Gateshead had not in a few hours altered their situation, but the disease had.*

* The terrible outbreak of Cholera at Kurrachee, on the 14th of June, 1846, is thus described in the "BOMBAY TIMES":—

"Camp Kurrachee, June 30, 1846.—Sunday, the 14th instant, the enemy first assailed us. There was divine service on the eve of that day at the church, for as many of the Fusileers as could be accommodated. I was there. The day had been strangely hot; during prayers a hurricane arose, bringing columns of dust, which swept through and hung about the church. As the Fusileers marched back from church, the wind fell as suddenly as it had arisen; the clouds of dust remained; the very heavens seemed drawn down upon our shoulders; the feeling was suffocating—all were under its influence. The 86th Regiment were at Roll-call; many were carried thence to the hospital, and were never more seen alive outside. The Cholera had been hanging about the Bazaar, but up to this day I am not aware that any European had been attacked. . . . The loss of Europeans must be upwards of 450 (in 15 days). I trust I may now say that the scourge has ceased. The hospitals are again tolerably clear; those who remain are recovering. We have had much thunder, accompanied by heavy and frequent falls of rain, since which time the atmosphere has become clear."

Moreover, we would inquire, are not the lower class of people of Glasgow as ill fed, as drunken, as dirty, ill-clothed, and lodged, and, as relates to situation, the same at this date, February 4, when there is no Cholera, as they will be in the course of a few weeks, when it will be amongst them? Which again will resolve itself into some atmospherical influence—which, from the facts I have detailed, from its movement—the course it is sweeping, and its attacks, I conceive to be none other than a peculiar state of atmospherical electricity.

In treating of this subject, from its novelty, great consequence, and serious interest—and from the obscurity in which facts, relative to it are still involved—the mind is probably apt to form unfounded theories, and to hurry to unsupported conclusions; I need not, therefore, warn my readers against the reception of these, or any other views, without close and minute investigation. Truth, in all things, is essentially important—but in this it carries with it the lives and happiness, or deaths and miseries of thousands of our race. Whoever, therefore, is acquainted with any particulars relating to this disease, should bring them under the public eye, that it may collect, compare, thoroughly examine, and form its settled opinions,—when we shall probably, without depending on accident, be enabled to adopt certain means, if Heaven permit, of arresting the progress of this sweeping pestilence. I write not to make converts to a particular doctrine, but to solicit attention and examination on a point of this interesting subject, apparently of the greatest importance.

If the medical profession would not think it too presuming, in one not of their body, to draw medical inferences from the foregoing statement, I should submit that these are indicated as precautionary measures, viz.:—Clothing of a warm texture, and, if possible, a non-conductor of electricity, as silk—enveloping the person in flannel, covered with silk, seems to be the most easy mode of effecting this object. The feet, above every thing, ought to be kept warm and dry. The clothes, or surface of the body, should never be allowed to continue damp or moist. Abstinence from every description of excess, and excitement liable to produce corresponding depression and debility, must be carefully avoided. The air of houses should be kept clean and fresh. *Fumigation,*

by chlorine gas, of confined streets ; and, if possible, of *whole towns*, to destroy pestilential effluvia, injurious to the general health, would also be of the greatest advantage. And, above all, endeavour to reach the cause of the disease, *by equalizing or purifying the disordered atmosphere, which may be effected by concussions of artillery*, in a similar manner as was done at Warsaw ; or, perhaps, by *drawing away the electricity from above a town, by wire conductors attached to floating kites or balloons*,—the termination of which ought to be in the river, if there be one, or some unfrequented part near the town ; or if the electricity be negative, extending the conductors to a greater distance, or a higher atmosphere.

These may seem somewhat visionary and extravagant proposals, but an extraordinary and dangerous emergency justifies extraordinary precautions and applications. Such a disease cannot be successfully encountered by ordinary means. It is a fresh and vigorous enemy, armed with new and terrible weapons,—therefore, it must be met with new defences, and redoubled energy of resistance.

The medical treatment indicated, seems to be, as now practised, viz.:—friction, heat, reproducing the nervous energy, by application along the spine, &c., such as Dr. Lange's cautery ; or, what has not yet been tried, *by insulating the body, and by gentle shocks of galvanism, or electricity, thus restoring the operations of the suspended nervous action*. These, and other means, conjoined with the system now pursued—of applications for mitigating the effects—such as bleeding, mustard emetics, opiate enemas, &c., seem, from the limited knowledge we possess of the nature of the disease, to be most appropriate.*

In conclusion—this new and alarming visitation, which has excited the anxiety and attention of all who have heard of, or seen its ravages—which has not yet afforded time to be recorded amongst the regular medical diseases, and may therefore be said, without presumption, to be open to the inquiry and examination of all,—will plead a sufficient excuse for a private individual thus humbly venturing into the arena of science, and endeavouring to assist in uplifting the veil which shrouds one of her most extraordinary objects.—SOUTH SHIELDS, Feb. 4, 1832.

* See Theory of Cholera from Investigations of Professor Delpech, Dr Coste, and Dr. Lowenhayn, and Treatment from Professor Lizars' Cholera Asphyxia, in Appendix.

APPENDIX.

Remarks of T. L. Walsh, Esq., Surgeon, resident some time on the Coast of China, on the Cholera of the Island of Chusan.—(LANCET, June, 1846.)

This disease usually attacked every European soon after his arrival: sickness and purging of *non-bilious* stools.

“This disease, (he says,) though troublesome and fatal, could be easily relieved. Anything that excited a secretion of bile, gave temporary relief.”

It was thought at first that the Chinese had poisoned the wells, but it was found the ship water had the same effects;—then it was imagined it might be from Malaria, but there were no swamps or low grounds, “the coast was hills and rocks.”

He thus proceeds, “I have attributed this disease to a certain electric state of the locality. The following will be my reason for doing so. The coast of China is the eastern coast of the largest tract of land in the world—the great eastern continent, extending in longitude from the east of China to the west of Africa. It is also surrounded by the largest tract of water—the great Pacific Ocean. Now, there is a current of electricity passing round the world from west to east (*see Faraday*), and electricity is conducted better by water than by land. Electricity will then be positive on the western, and negative on the eastern coast; or, on the one side it will be plus, and on the other minus. Now, we have pretty good proof, that when electricity is *negative*, *vitality is depressed*; *when it is positive, it is excited*. The hand placed in the negative current becomes cold—in the positive warm; and many practitioners in India have remarked, that there are peculiar diseases in connexion with peculiar electric states of any locality: that there is a remarkable difference in the biliary secretion; *the liver is excited where the electricity is positive—depressed when it is negative*. Now, in diseases on the coast of Africa, the practitioners complain of excess in the secretion of bile; on the coast of China, of deficiency. In the diseases of China, there was a complaint that no bile was secreted. This is directly the reverse of the diseases of the coast of Africa—an excess of the action of the liver is complained of in the

same latitude, with the same heat of climate. Bleeding is more resorted to on the coast of Africa, and calomel in large doses to act as a sedative. In China bleeding was seldom resorted to with good effects, and calomel was found beneficial in small doses to act as an excitant." * * * * *

There is an extraordinary resemblance in this perennial disease of Chusan—its origin, action, and treatment to that of Spasmodic Cholera. It bears out, in the most singular manner, the views of the electric origin of Cholera.

THEORY OF CHOLERA.

From "Result of Investigations by Professor Delpech, Dr. Coste, and Dr. Lowenhayn."

"The entire theory of the disease may be conceived by viewing the morbid alteration in connexion with the symptoms of Cholera,

An intense fixed pain, limited to a very narrow space, which corresponds exactly to the point of the linea alba, directly over the extremity of the 9th and 16th ribs, always precedes the manifestation of the other symptoms. * * Exactly the situation of *the central point of the ganglionic nerve.*

The diminution of the circulation is the first phenomenon that succeeds. * * As yet no evacuations; the blood still entire; yet the arteries pulsate feebly; their diameter diminishes * * at first manifested by alternations * * corresponding to the epigastric pains. * * * Similar to strangulated hernia. In both cases it is the ganglionic nerve that suffers.

An unusual and enormous secretion takes place along the whole alimentary passages. To support it, the organs must have received a great impulse from the nerves on which they depend * * the ganglionic nerves.

A convulsive state manifests itself in the stomach and intestines. * * Any one may verify the fact, that the lower part of the pneumogastric nerve is concerned in the affection, which is at first peculiar to the simular ganglia and their plexus.

The blood ceases to be arterialized. * * The liver—the head of the organs by which the blood is purified; as the solar plexus, common to the two ganglia, supplies the liver with the nerves by

which it is animated, it cannot appear strange that the functions of this organ should languish or cease.

The secretion of the urine ceases. * * The disease of the ganglia distinctly extends in most cases to the venal plexus.

The general temperature of the body is diminished first in the limbs, and all the appendages ; but it remains in the trunk and viscera. * *

This phenomenon, which naturally supposes a diminution in the influence of the ganglionic nerves, which accompany the arteries, is easily explained by the morbid state of the central point of that apparatus.

There can be no exaggeration in seeking, in the same conditions, the immediate cause of the cramps. They, in fact, keep pace with the progress of the disease, and of the abdominal symptoms.

One of the last results is the refrigeration of the expired column of air. * * *There is no longer carbonic acid gas in the expired air*

* * The communications of the pneumogastric nerve with the ganglionic apparatus, and the probable cause of the extension of the disease of the latter to the continuous portion of the former, this extension may, and probably does, reach the pneumocardiac plexus. The pulsations of the heart are seen to fail when the refrigeration of the column of expired air takes place. * * *

Infer from the same anatomical facts, and from some unusual circumstances, * * the necessity of varying the treatment, according to certain complications, which these facts attest."

TREATMENT OF CHOLERA ASPHYXIA,

BY PROFESSOR LIZARS.

"FIRST STAGE.—*Nearly all the cases preceded by Diarrhœa for a longer or shorter period.*—In this stage, three or four grains of calomel, with five to ten grains of aloes or colocynth, every three hours, till the feces are perfectly bilious. Camphor and opiates injurious. Blood may be moderately abstracted from abdomen or arm, or both. Afterwards, the diet to be regulated, and the bowels watched.

SECOND STAGE.—*Vomiting and purging, with or without cramps.*—An enema of four, five, or six lbs. of hot water, with ten, fifteen, or twenty grains of tobacco boiled in it, as hot as the hand can bear, and kept up with a towel by the hand for an hour ; the pa-

tient to drink hot water ; vesication produced on the epigastric region by a cautery or other means, as well as along the spine. Bags of sand, or bottles of hot water, applied to the extremities ; from twenty to thirty grains of calomel given in form of bolus, with half grain of opium ; blood drawn from temporal artery to relieve congestion (better from arteries than veins), to be repeated as the system rallies ; and calomel and aloes given, and hot water enemas applied till the stools are feculent and bilious.

THIRD STAGE.—*If the patient have incessant vomiting and purging of whitish, gruelly, or rice watery fluid, with cramps, cold-skin, shrunk countenance, livid hands, and no pulse even at the carotids, * * he is to be treated nearly in the same manner as in the preceding, only a little more actively.*

Hot water enemas, without tobacco, with a few drops of laudanum, till the patient is resuscitated ; keeping each enema up only half an hour. A tablespoonful of hot brandy every quarter of an hour. Whenever the pulse becomes perceptible, bleed cautiously at first ; more freely afterwards ; rub the hands and arms with hot liniments ; actual cautery on the stomach and spine ; and the application of galvanism with care. The positive *pole* to the nape of the neck, and the negative to the loins, or region of the stomach, to keep up life till other remedies have time to act. In the second and third stages care must be taken not to move the patient from a recumbent posture."

In India, calomel and colocynth, with cold affusions to the surface, and vinegar and water to the head, have been used with effect. The internal administration of liquor ammonia, and its external application, have been successfully practised by some professional men. Others again declare croton oil and phosphorus highly advantageous. Chloroform, it is stated, has been also tried with success. And naphtha, in the present attack in Russia, has been administered internally, and used externally over the epigastric regions, the Russian physicians conceive with good results,—combining, at the same time, other measures.

Cholera, in the fatal outbreak at Kurrahee, was marked by one invariable symptom—a profusion of liquid discharged through the skin, upon the surface, even when all the other symptoms,

were absent; and “ nothing,” says Mr. Thom, in his Report, “ was more uniform than the desire to be exposed to fresh air or a current of wind, and to have every covering removed from the body.”

Experience will show whether this instinct be beneficial. Small pox and fevers, like cholera, used to be treated with heated rooms and warm coverings, till a better knowledge established the opposite treatment.

In an exhausted nervous system, and the liquid on the surface, by its conducting powers, reducing it still farther, a current of fresh air, it is possible, may not only constrict the vessels, but afford electricity to the surface, and by supplying oxygen to the lungs, generate electricity there also, according to Dr. Moran; and thus it is possible this instinct may be a good one.

The instinct for cold water, though at first resisted as destructive, has been found, according to several medical authorities, on further experiment, one of the most beneficial applications.

We leave, however, these matters, at this point, to the better experience of medical practitioners.

the first of these is the fact that the
the second is the fact that the
the third is the fact that the

the fourth is the fact that the
the fifth is the fact that the
the sixth is the fact that the

the seventh is the fact that the
the eighth is the fact that the
the ninth is the fact that the

the tenth is the fact that the
the eleventh is the fact that the
the twelfth is the fact that the

the thirteenth is the fact that the
the fourteenth is the fact that the
the fifteenth is the fact that the

